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DATE: October 2, 2006

TO: Examiner Mark Ruthosky
Group Art Unit 1745

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Application No.: 09/435,748
Applicant: Buckley et al.
Due Date: October 3, 2006

OUR REF.: 2950.27-US-01

FROM: Peter S. Dardi, Ph.D.
PHONE #: 404-949-5730

Attached is the following for filing in the above-identified application.

1) Reply Brief.

Respectfully submitted,

Peter S. Dardi

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being transmitted by facsimile to the U.S. Patent and Trademark Office, Fax No. 571-273-8300 on the date shown below.

October 2, 2006
Date

Peter S. Dardi

Peter S. Dardi, Ph.D.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:	Attorney Docket No.: 2950.27US01
Buckley et al.	Confirmation No.: 5623
Application No.: 09/435,748	Examiner: M. Ruthkosky
Filed: November 8, 1999	Group Art Unit: 1745
For: BATTERIES WITH THIN ELECTRODES	

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

REPLY BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INTRODUCTORY COMMENTS

In response to the Examiner's Answer of August 3, 2006, Appellants respectfully submit this Reply Brief. Applicants only address particular issues raised in the Examiner's Answer.

Please grant any extension of time necessary for entry; charge any fee due to Deposit Account No. 50-3863.

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Peter S. Dardi, Ph.D.

REMARKS

Indefiniteness Rejection

1. "About"

The Examiner indicated that Appellants did not consider the phrase "less than about," but only considered the term "about." The Examiner asserts that the "less than" phrase indicates an upper limit. However, with all due respect, the Examiner's statements miss the point. The term "about" is always used with respect to a precise number, i.e., a limit of some kind. Limits can be such as "less than," "greater than," "no more than," "no less than," the value of," etc. In general, the operation of the term "about" is similar regardless of how the corresponding limit is phrased. The true issue is the surrounding facts relating to particular claims. Certainly, in some situations involving integers, such as "about 2 screws to about 10 screws," may arguably be indefinite in some contexts. Under the present facts, the reality is that the term "about" reflects the irrefutable uncertainty in specifying the corresponding values.

With respect to the present claims, extremely small dimensions are at issue. These simply cannot be measured with absolute certainty. To build a system based on the fiction that there can be a precise limit is just that a fiction. Thus, under the present facts, the meaning of the term "about" simply puts the claim terminology firmly routed in reality that the limits are not precise, and the scope of the term can be determined by a person of ordinary skill in the art based on measurement ability.

A quick search of claims on the U.S. PTO web site yields that since 1976 there have been **53,976** patents issued with the phrase "less than about" in the claims. Many of these have been issued recently. Similarly, **28,519** patents have issued since 1976 with the phrase "greater than about" in the claims. Either there are countless incompetent patent examiners, which Appellants do not believe is true, or the phrase is not inherently indefinite. Appellants have argued case law

and the perspective of an ordinary person of skill in the art. The Examiner has failed to assert why in the present context that the phrases are unclear.

2. "Derivatives"

As stated succinctly in MPEP 2173.04, "Breath Is Not Indefiniteness." The MPEP cites In re Miller as support for this proposition. The only issue is whether or not the scope embraced by the claims is clear. "When the examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the examiner that the claims are directed to such patentable subject matter, he or she should allow the claims which define the patentable subject matter with a reasonable degree of particularity and distinctness." MPEP 2173.02 (emphasis in original).

The Examiner notes correctly that 35 U.S.C. § 112, first paragraph specifies both that the claims set forth what applicants regard as their invention and that the claims particularly point out and distinctly specify the metes and bounds of the protected subject matter. The Examiner incorrectly asserts that the word "derivatives" does not meet the second criterion. A person of ordinary skill in the art would be a Ph.D. chemist or a material scientist with a B.S. or Ph.D.

The Examiner seems to be saying that person of ordinary skill in the art would not know a derivative when they saw it. This is surprising since this is conventional terminology. First, let's review the Examiner's specific points on lithium cobalt oxide. Lithium cobalt oxide is a mixed metal oxide, which is a solid-state solution if amorphous or a particular crystalline form if crystalline. The Examiner noted that there are compounds of cobalt, cobalt oxide, lithium nickel oxide, lithium nickel cobalt oxide and lithium cobalt oxides with various substitutions. Some of these may be derivatives of lithium cobalt oxide, and others are not. Lithium cobalt phosphate would not be considered a derivative since it has an oxygen anion substituted with a phosphate anion, which is a significantly different composition and not reasonably considered a derivative. Similarly, how would calcium cobalt oxide be a derivative of lithium cobalt oxide? Clearly, calcium cobalt oxide is not reasonably a derivative of lithium cobalt oxide. Describing calcium

cobalt oxide a derivative of lithium cobalt oxide would be like saying all organic compounds are derivatives of each other because they have carbon atoms. Some of the other compounds listed by the Examiner may be considered derivatives if they have dopants of other metals and do not fundamentally change the lithium cobalt oxide compound. None of this is mysterious, and just because there are many possible derivatives do not make the term indefinite. See above, breath does not result in indefiniteness. A person of ordinary skill in the art would not have difficulty in evaluating the claim terms, and the Examiner has not indicated how a **person of ordinary skill in the art** would have trouble interpreting the claim.

Written Description

The sole basis for the Examiner's position seems to be that there is no explicit writing with the specific claim limits. However, this is not the legal standard and has never been the legal standard. "The subject matter of the claim need not be described literally (i.e., using the same terms or *in vaec verba*) in order for the disclosure to satisfy the description requirement." MPEP 2163.02. With all due respect, the Examiner has not commented with respect to the legal standards as summarized in MPEP 2163.02 and cases cited therein. A person of ordinary skill in the art would undoubtedly appreciate possession of the claimed invention. The Examiner has failed to establish prima facie lack of written description.

Anticipation Rejection

This rejection is based on the claim interpretation of "less than about 9.5" as covering 10 and "less than about 4.5" as covering 5. All are in agreement that the Examiner should give the claims their broadest **reasonable** interpretation. The Examiner maintains that his interpretation is reasonable. Appellants maintain that it is not reasonable.

Unfortunately, the Examiner has not provided any basis in the art or the perspective of a person of ordinary skill why his interpretation of the claims is reasonable. It is not a reasonable basis to have a particular claim interpretation just because it supports an art rejection that the Examiner wants to make. If the Examiner had presented some arguments, Appellants would have some specific points to address.

In Appellants' main brief, Appellants have asserted that the precision of the numbers is indicated to be on the order of 0.1 microns and that measurements are reasonable on this order or less. Thus, the breath of the Examiner's claim interpretation is on its face unreasonable to a person of ordinary skill in the art. With all due respect, the Examiner has not refuted these arguments.

With respect to claim 88, the Examiner is interpreting "less than about 2.5 microns" to cover 5 microns. With all due respect, this illustrates the flaws in the Examiner's approach. The Examiner still has not provided any reasonable basis of why his assertion is reasonable. The criterion of reasonableness seems to be based on convenience to the Examiner for formulating a desired rejection. Appellants are aware of no legal basis to support such a criterion.

Since the Examiner has not refuted evidence presented by Appellants nor provided a reasonable basis for his claim interpretation, the reference does not prima facie anticipate the claims, and the rejection must be withdrawn.

Obviousness Over Dansui et al.

With all due respect, the Examiner is ignoring several important issues and relies on unfounded conclusory statements. Appellants did not just note that claimed values were outside of the ranges noted in the Dansui patent. The claimed ranges are outside of the **preferred ranges** in the Dansui patent. If the claimed ranges are outside of the **preferred ranges**, the Dansui patent is actually teachings that smaller values are not desired or perhaps not possible.

The Examiner supports his position based on the statement "as is well known that adding more or less active material to an electrode will increase or decrease the capacity of the battery." Appellants are not sure who wants less capacity for their batteries. The Examiner misses the point through discussions of amounts of conductor etc. The desirability for thinner electrodes would be driven by something other than wanting less capacity. The Examiner has not articulated such a motivation. The reference teaches that electrical conductivity is a motivation to decrease the thickness of the electrode to a certain degree. However, the electrical conductivity issue does not motivate arbitrarily thin electrodes, just thin enough to give suitable electrical conductivity. The Examiner has not provided suitable motivation with respect to the Dansui patent in view of the presently claimed invention.

Furthermore, the Dansui does not provide a **reasonable expectation of success** for producing the thin electrodes disclosed and claimed by Appellants. Specifically, the Dansui patent simply does not describe the types of approaches suitable to form the thin electrodes claimed in the present application. Therefore, the reference clearly falls far short of rendering the present claims prima facie obvious.

With respect to the current collector, the Examiner seems to assert that the current collector can be made arbitrarily thin. "Fact that references can be combined or modified is not sufficient to establish prima facie obviousness." MPEP 2143.01. However, the appropriate size of the current collector depends on factors such as the amount of current and the like. The Examiner does not point to any teachings in the art to reduce the size of the current collector arbitrarily. The Examiner's has not provided any well supported motivation for the rejection of claims relating to the thickness of the current collector.

The Examiner cites MPEP 2144.04(d) for support that changes in size do not impart patentability. While such propositions can be suitable as a starting point for the analysis, they cannot replace the statutory requirements and case law requirements under Graham of a review

of the subject matter as a whole. In particular, in the present case the claimed subject matter is **not** on the same scale as the reference disclosure. This may at first seem surprising, but it is true. The Dansui patent discloses electrode thicknesses down to 10 microns, but their example show 65 microns to 120 microns, a factor more than six greater than their stated (non-exemplified) lower limit. Thus, their lower limit of 10 microns would be pushing their approach to its limit. Applicants' claimed invention is truly on a different scale since Appellants' upper limit is less than the lower limits obtainable with the approaches taught in the references. As a result, the principles of MPEP 2144.04(d) are consistent with the withdrawal of the present rejection.

The Dansui patent does not render Appellants' claimed invention prima facie obvious.

Obviousness Over Dansui et al. and Satoh et al.

The Examiner relies on the teachings of the Dansui patent for teaching the claimed electrode thickness. As described above and in Appellants' main Brief, the Dansui patent falls short in this regard.

Group 2 Claim - The Satoh patent teaches carbon particles as a lithium intercalation compound and other carbon particles. Thus, the material is electroactive, i.e. it participates in the reduction-oxidation reactions of the cell. The Examiner's assertion is that the carbon particles of the Satoh patent could be substituted into the chemistry of the Dansui patent. The carbon particles of the Satoh patent are not an "electroactive material" as specified in the claims of Group 2 with respect to the chemistry of the Dansui patent. The rejection is simply not supported on the record. Since the carbon particles of the Satoh patent would not be expected to be electroactive in the chemistry of the Dansui battery, it does not matter if they are also electrically conductive, because even if you put them into the Dansui battery, they would not be electroactive in the battery. There is no motivation to combine the teachings of Satoh with

Dansui as suggested by the Examiner, and the **combination** does not result in subject matter corresponding to the Group 2 claim.

Group 4 Claims - With all due respect, the Examiner's arguments in this regard are far from being on point. The electrodes and the current collectors are very different materials. The current connectors are metal, while the electrodes are a very highly loaded polymer with a large majority being particulates. Metal surfaces can be very smooth such that some increased surface roughness may be desirable. On the other hand, the inherent large surface roughness of the electrodes due to the particulates is detrimental to the formation of the thin structures disclosed and claimed by Appellants. Thus, the teaching of the desirability to **roughen** the current collector certainly does not teach or suggest **smoothing** the electrode since they are diametrically **opposite** objectives.

Group 5 Claims - The Examiner's statements on particle uniformity are not on point since uniformity is independent of particle size. A pile of basketballs and golf balls may have the same average size as a pile of softballs, but that does not make the basketballs and tennis balls useful for playing softball. This example illustrates the difference between average sizes and size uniformity

The combined disclosures of the Dansui patent and the Satoh patent do not render any of Appellants' claims prima facie obvious.

Obviousness Over Dansui et al. and Kawakami et al.

The Examiner states that "the [particle] size distribution is not claimed in the instant invention." This is not true since it is the subject of claim 77, Group 4. Also, the Examiner is incorrect that the same average size would be considered equivalent with a uniform material with that average size unless the Examiner knows how to play softball with a mixture of golf balls and basketballs. Uniformity is a distinct feature separate from average particle size. The Examiner

is also wrong that "applicant has offered no unexpected results for having uniform particles" since Appellants' specification and **examples clearly demonstrate** low surface roughness of the electrodes, an unexpected result unless the Examiner has evidence otherwise regarding the expected nature of this result. The combined disclosures of the Dansui patent and the Kawakami patent do not render Appellants' claimed invention prima facie obvious.

Obviousness Over Dansui et al., Kawakami et al. and Miyasaka et al.

Appellants maintain that the Miyasaka patent does not make up for the deficiencies of the Dansui patent and the Kawakami patent with respect to the claimed subject matter of Appellants' application. Thus, the combined teachings of the Dansui patent, the Kawakami patent and the Miyasaka patent do not render Appellants' claimed invention prima facie obvious.

SUMMARY

The Examiner has not establishing prima facie unpatentability based on all of the features of the claimed invention. Therefore, the rejections should be withdrawn, and Applicants respectfully request such action.

Respectfully submitted,

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